

**Docket No.: 03-01 US**

**REMARKS**

**STATUS SUMMARY**

Claims 1-18 are pending in the present Application. Claims 1-3, 8, 9 and 13-18 are rejected by the Examiner in view of newly discovered reference and 4-7, 10-12 were objected to.

**Claim Rejections – 35 U.S.C. § 103**

Claims 1-3 and 8-9 were rejected as being unpatentable over Primas et al (US 5031234) in view of Jones et al (US 20040019443). Since Primas et al is a newly discovered, primary reference in the rejections, in this response the Applicant pays specific attention to analysis of Primas teaching and its interpretation given by the Examiner.

The Examiner states that "*Primas et al discloses in (figs 2,3) a method of phase conjugated vectoring (PCV) (18) of transmission signals propagating via fiber optic cable (col. 5, lines 3-67), comprising the steps*" ....etc. The Applicant respectfully disagrees with the Examiner for the following reasons.

The col.5, lines 3-67 of Primas et al patent state the following:

*"Referring now to FIG. 2, as depicted therein the stabilized fiber optic distribution system 12 of this invention is electronically controlled and uses the conjugation method as described briefly above to maintain frequency stability... The reference unit 14 consists of a phase conjugator 18, a fiber optic transmitter 20, a fiber optic receiver 22, a phase lock loop (PLL) 24, and a fiber optic coupler 26. The phase conjugator 18 compares the phase at the transmitter 20 and receiver 22 of the reference unit 14 and uses a voltage controlled oscillator (VCO), to be described shortly, to maintain a constant phase at the remote unit 16...*

The Examiner incorrectly equates the Primas' teaching with the teaching of claimed invention. The phase conjugator of Primas invention can not be, in any dimension, equated to phase conjugated vectoring of claimed invention. It is not even the confusion of transmission media (optical fiber vs. twisted pairs), but rather fundamental misunderstanding of the technology.

Primas' phase conjugator is designed to maintain the optical signal phase for varying environmental conditions (for example, temperature) of the optical fiber; to accomplish this, "phase conjugator 18 compares the phase at the transmitter 20 and receiver 22 of the reference unit 14 and uses a

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voltage controlled oscillator (VCO), to be described shortly, to maintain a constant phase at the remote unit 16". If the term "conjugator" is changed to "comparator" the meaning will be the same.

Since the cited prior art does not relate directly or indirectly to the technology of telecommunication networks, it is impossible to provide meaningful comparison of teachings of Primas' patent and the present invention. For obvious reasons Primas et al do not describe plurality of transmission elements, like twisted pairs or fibers, there is no interaction between these elements, there is no "time inversion" typical for phase conjugation in random media etc. With all due respect, there is no way to identify the technology of Primas's patent with a method of phase conjugated vectoring.

The Examiner misinterpreted prior art in attempt of finding its similarity with the features of the subject invention. To illustrate this fact a several Examiner's statements may be given as examples:

*"Propagating a reference signal (reference frequency) from a receiver site (14) via (fiber optic cable) for obtaining a wavefront of PCV reference signal at a transmitter site (fig. 2, 14, 10 and 16)".* There is no "wavefront", and no "PCV" on the transmitter site; they simply do not exist, and mentioning them in the context of Primas' invention has no meaning.

*"establishing PCV antenna (virtual antenna) bundle for (fiber optic cable) (fig. 3, and col. 5, lines 31-67)";* there is only one fiber in Primas' system, and talking about "antenna" and "bundle" has no meaning;

*"scaling input transmission signals by said PCV reference signal for obtaining mutually coherent PCV transmission signals (see abstract, col.6, lines 1-35)";* the teaching of these elements or actions in lines 1-35 does not exist, but rather the feedback loop is described for compensating of environmental changes in the fiber;

*"propagating said mutually coherent PCV transmission signals via said PCV antenna (virtual) bundles for receiving only one signal in a corresponding (fiber optic cable) at the receiver site (col. 6, lines 27-35)"* – again, none of the above is described, may be described or implied in these lines 27-35, but rather an electronic feedback loop keeping standard frequency on the receiving end.

The final Examiner's statement that *"Primas et al discloses all of the subject matter discussed above, but for specifically teaching a plurality of twisted pairs of a telephone cable between the devices."* has absolutely no foundation or even physical meaning.

Similar analysis may be applied to Examiner's reference to Jones et al patent application

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"performing sequence time domain reflectometry over a communication channel to determine the location of line anomalies in the communication channel". In the Examiner's view, *"It would have been obvious to one of ordinary skilled in the art at the time of the invention to have utilized the device of Jones et al in the system of Primas et al in order for sequence time domain reflectometry"*. The Examiner believes these two references encompass the subject matter of the present invention. However, the combination suggested by the Examiner would not perform any reasonable and useful function at all. No one having ordinary skills in fiber optics would employ, for the purpose of transmitting standard frequency, defective optical fiber that needs reflectometry to determine where the signal is corrupted. The person of ordinary skills in the art would never combine these two systems with the purpose to diagnose channel crosstalk – the crosstalk simply does not exist in any of these systems or in their combination.

The number of additional references cited by the Examiner has been cited in the previous Office Action. The rejections of the claims over Miyoshi, Cioffi; Sands or Amrany in any combinations thereof are not proper for at least reasons disclosed earlier.

The Applicant regrets that the Examiner with the second office action continues to reject the claims of the subject patent application based on the prior art having random similarity with certain terminology utilizing in different fields of technology.

#### CONCLUSION

It is respectfully submitted that the present application is in condition for allowance, and an early notice to such effect is earnestly solicited. If the Examiner has any questions concerning the communication, or specifics of phase conjugation and its difference from other ways of characterizing random media, or any technical questions relating to this technology, she is invited to contact the undersigned agent at (650) 856-3571.

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Respectfully submitted,



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